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Cross-Sectional Study

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Gastrointestinal Endoscopic Findings in Patients with Iron-Deficiency Anemia: A Cross-Sectional Study from Ardabil, Iran

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Abstract

Introduction: Iron-deficiency anemia (IDA) may be associated with a wide range of gastrointestinal disorders, including clinically significant malignancies. This study evaluated the spectrum of gastrointestinal endoscopic findings in patients with IDA and the association between gastrointestinal symptoms and endoscopic abnormalities.

Methods: In this cross-sectional study, men aged ≥18 years and postmenopausal women with IDA underwent both upper gastrointestinal endoscopy and colonoscopy. Demographic, clinical, and laboratory data were collected. An abnormal endoscopic finding was defined as any abnormality detected during endoscopy. Associations between gastrointestinal symptoms, laboratory parameters, and endoscopic findings were assessed using appropriate statistical analyses.

Results: A total of 580 patients were included, including 320 men (55.2%) and 260 women (44.8%). Upper gastrointestinal abnormalities were detected in 402 patients (69.3%). Colonic inflammation, colorectal polyps, and colorectal cancer were identified in 76 (13.1%), 128 (22.1%), and 34 (5.9%) patients, respectively. No gastrointestinal cause of IDA was identified in 342 patients (59.0%). Upper gastrointestinal symptoms were associated with abnormal upper endoscopic findings (OR=9.56, 95% CI: 4.83–19.18; P<0.001), and lower gastrointestinal symptoms were associated with abnormal colonoscopic findings (OR=4.02, 95% CI: 1.54–10.47; P=0.001). Hemoglobin and ferritin levels were not associated with gastrointestinal malignancy.

Conclusion: Gastrointestinal endoscopy revealed a broad spectrum of abnormalities in patients with IDA, including colorectal cancer. Although gastrointestinal symptoms were associated with abnormal endoscopic findings, their absence did not exclude gastrointestinal pathology.

Keywords: Iron-deficiency anemia; Endoscopy; Colonoscopy; Gastrointestinal abnormalities; Colorectal cancer

Introduction

Iron-deficiency anemia (IDA) is a common clinical condition with various underlying cause [1]. In adult men and postmenopausal women, gastrointestinal blood loss and gastrointestinal diseases are important potential causes and should be considered during diagnostic evaluation [2, 3].

A wide range of gastrointestinal disorders, including inflammatory lesions, peptic ulcer disease, colorectal polyps, and gastrointestinal malignancies, may be associated with IDA [4]. Because significant gastrointestinal lesions can occur in patients without prominent gastrointestinal symptoms, the absence of symptoms does not necessarily exclude underlying pathology [5, 6].

Upper gastrointestinal endoscopy and colonoscopy allow direct evaluation of potential gastrointestinal abnormalities [7]. However, the spectrum of endoscopic findings may vary among different populations [8, 9]. This study aimed to determine the frequency and spectrum of upper and lower gastrointestinal endoscopic

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abnormalities in patients with IDA and to evaluate the association between gastrointestinal symptoms, selected laboratory parameters, and endoscopic findings.

Materials & Methods

This cross-sectional study was conducted at Imam Khomeini Hospital, Ardabil, Iran, between January 2013 and January 2014. Men aged ≥18 years and postmenopausal women with IDA who were referred for gastrointestinal evaluation were included. Patients with known hematological disorders, established non-gastrointestinal causes of anemia, or an obvious source of blood loss were excluded.

Demographic, clinical, and laboratory data were collected. Gastrointestinal symptoms and laboratory parameters, including hemoglobin and serum ferritin levels, were recorded. All patients underwent both upper gastrointestinal endoscopy and colonoscopy. Endoscopic findings were recorded based on the examination reports.

An abnormal endoscopic finding was defined as the presence of any abnormality detected during endoscopy, regardless of whether it was considered the definite cause of IDA. The primary outcome was the frequency and spectrum of gastrointestinal endoscopic abnormalities. Secondary analyses evaluated the association between gastrointestinal symptoms and abnormal endoscopic findings and the relationship between hemoglobin and ferritin levels and gastrointestinal malignancy.

Categorical variables were presented as frequencies and percentages. Associations were assessed using appropriate statistical tests. Logistic regression analysis was used to evaluate associations between gastrointestinal symptoms and abnormal endoscopic findings. Results were expressed as odds ratios (ORs) with 95% confidence intervals (CIs). A P value <0.05 was considered statistically significant.

Results

A total of 580 patients with iron-deficiency anemia (IDA) were included in the study. The mean age was 51 ± 9 years, and 320 patients (55.2%) were men and 260 (44.8%) were women. Anemia was detected incidentally in 102 patients (17.6%), whereas 478 patients (82.4%) presented with symptoms. Fatigue and weakness were the most common complaints, reported by 453 patients (78.1%), followed by rectal bleeding in 104 (17.9%), constipation in 98 (16.9%), weight loss in 39 (6.7%), and melena in 13 patients (2.2%). Patients could report more than one symptom.

All patients underwent both upper gastrointestinal endoscopy and colonoscopy. Abnormal upper gastrointestinal findings were detected in 402 patients (69.3%). Gastric erosions were the most common finding, occurring in 158 patients (27.2%), followed by gastric ulcers in 109 (18.8%) and duodenal bulb ulcers in 40 (6.9%). Other findings included gastric subepithelial lesions in 35 patients (6.0%), gastric polyps in 24 (4.1%), gastric masses in 19 (3.3%), and celiac disease in 18 patients (3.1%). Individual patients could have more than one endoscopic abnormality (Table 1).

Table 1. Upper gastrointestinal findings in patients

Upper gastrointestinal findings	n (%)
Any abnormal upper GI finding	402 (69.3)
Gastric erosions	158 (27.2)
Gastric ulcer	109 (18.8)
Duodenal bulb ulcer	40 (6.9)
Gastric subepithelial lesions	35 (6.0)
Gastric polyps	24 (4.1)
Gastric mass	19 (3.3)
Celiac disease	18 (3.1)

Lower gastrointestinal abnormalities included colonic inflammation in 76 patients (13.1%), colorectal polyps in 128 (22.1%), and colorectal cancer in 34 (5.9%). Among patients with colonic inflammation, left-sided colitis was the most common pattern (30/76, 39.5%), followed by pancolitis (13/76, 17.1%), drug-induced colitis (12/76, 15.8%), proctitis (11/76, 14.5%), and ischemic colitis (10/76, 13.2%). Among the 128 patients with colorectal polyps, 23 (18.0%) had polyps larger than 2 cm (Table 2). No gastrointestinal cause considered responsible for IDA was identified in 342 patients (59.0%). Upper gastrointestinal symptoms were significantly associated with abnormal findings on upper gastrointestinal endoscopy (OR=9.56, 95% CI: 4.83–19.18; P<0.001). Similarly, lower gastrointestinal symptoms were associated with abnormal colonoscopic findings (OR=4.02, 95% CI: 1.54–10.47; P=0.001).

Table 2. Lower gastrointestinal findings in patients

Lower gastrointestinal findings	n (%)
Colonic inflammation	76 (13.1)
Left-sided colitis	30 (5.2)
Pancolitis	13 (2.2)
Drug-induced colitis	12 (2.1)
Proctitis	11 (1.9)
Ischemic colitis	10 (1.7)
Colorectal polyps	128 (22.1)
Colorectal cancer	34 (5.9)

Hemoglobin and serum ferritin levels were not significantly associated with gastrointestinal malignancy.

Discussion

In this cross-sectional study of 580 patients with IDA, bidirectional endoscopy revealed a broad spectrum of upper and lower gastrointestinal abnormalities. Upper gastrointestinal abnormalities were identified in 69.3% of patients, with gastric erosions and gastric ulcers representing the most frequent findings. Colorectal polyps were detected in 22.1% of patients, and colorectal cancer was identified in 5.9%, emphasizing the importance of gastrointestinal evaluation in this population.

The detection of colorectal cancer in 34 patients is a clinically important finding. IDA may be the presenting manifestation of gastrointestinal malignancy, particularly in adult men and postmenopausal women, even in the absence of typical gastrointestinal symptoms. In our study, symptoms were significantly associated with abnormal findings on both upper endoscopy and colonoscopy; however, this association does not imply that asymptomatic patients have a normal gastrointestinal tract. Indeed, the absence of symptoms should not be considered sufficient to exclude clinically important gastrointestinal pathology.

Upper gastrointestinal symptoms showed a particularly strong association with abnormal upper endoscopic findings, with an approximately 9.5-fold increase in the odds of detecting an abnormality. Lower gastrointestinal symptoms were also associated with abnormal colonoscopic findings. These results suggest that symptoms may help predict the likelihood of detecting endoscopic abnormalities, but they should be interpreted as part of the overall clinical assessment rather than used alone to determine the need for investigation.

An important finding of this study was the difference between the frequency of any endoscopic abnormality and the identification of a lesion considered responsible for IDA. Although upper gastrointestinal abnormalities were detected in 402 patients, no gastrointestinal cause of IDA was identified in 342 patients. This apparent discrepancy reflects the fact that an abnormal endoscopic finding was defined broadly as any detected abnormality; therefore, some lesions may have been incidental or not considered sufficient to explain iron deficiency. This distinction is important when interpreting the diagnostic yield of endoscopy in patients with IDA.

Celiac disease was diagnosed in 18 patients (3.1%), supporting the consideration of malabsorptive disorders in the evaluation of IDA. In addition, the detection of large colorectal polyps (>2 cm) in 18.0% of patients with polyps highlights the potential clinical significance of colonoscopic evaluation beyond the detection of malignancy alone.

Neither hemoglobin nor serum ferritin levels were significantly associated with gastrointestinal malignancy. Therefore, the severity of anemia or iron depletion alone may not reliably identify patients with underlying gastrointestinal malignancy, and these laboratory parameters should not be used in isolation to exclude significant pathology.

The main strengths of this study include its relatively large sample size and the fact that all patients underwent both upper gastrointestinal endoscopy and colonoscopy. However, the single-center and cross-sectional design may limit the generalizability of the findings and precludes establishing a causal relationship between individual lesions and IDA. Furthermore, because patients could have more than one endoscopic abnormality, the relative contribution of each lesion to the development of IDA could not always be determined.

Overall, our findings demonstrate that patients with IDA may harbor a wide range of gastrointestinal abnormalities, including colorectal cancer and other clinically significant lesions. Gastrointestinal symptoms increase the likelihood of abnormal endoscopic findings but do not reliably exclude important pathology when absent.

Conclusion

Gastrointestinal endoscopy revealed a broad spectrum of abnormalities in patients with IDA, including colorectal cancer. Although gastrointestinal symptoms were associated with abnormal endoscopic findings, their absence did not exclude gastrointestinal pathology.

Further studies using standardized diagnostic criteria and prospectively collected data are warranted to better characterize the causes and predictors of gastrointestinal lesions in patients with IDA.

Informed Consent

Written informed consent was obtained from all participants or their legal guardians prior to enrollment.

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Conflicts of Interest (COI)

The authors declare that they have no conflicts of interest.

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